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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/030,109 | 03/20/2002 | Mouafak Arif Zaher | P67369USO | 2125 |

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| EXAMINER |
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EDGAR, RICHARD A

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| ART UNIT | PAPER NUMBER |
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3745

DATE MAILED: 06/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/030,109

Applicant(s)

ZAHER, MOUAFK ARIF

Examiner

Richard Edgar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on a preliminary amendment filed 3/20/2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>8</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities:

On page 3, line 26, delete the period "." before "Preferably".

On page 6, line 24, delete "1".

On page 8, line 20, the pump size is missing the units of measurement.

On page 9, line 13, "figure9." should be --Figure 9.--.

On page 9, line 15, "Figures 3" should be --Figure 3--.

Appropriate correction is required.

Claim Objections

Claims 1-12 and 16 are objected to because of the following informalities:

In claims 1-12, "A Pumping" should be --A pumping--.

In claim 16, line 2, "siad" should be --said--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 13 recite, "wherein said centrifugal pump is provided with an impeller which has a plurality of vanes configured to define there between larger passageways when compared to a conventional centrifugal pump which would operate in or near optimum conditions when pumping liquid only". The limitations, "a conventional centrifugal pump" and "optimum conditions" are each indefinite.

On page 6, lines 27-28, Applicant states: "It is known that standard centrifugal pumps normally utilize approximately 7 or 8 impeller vanes for the pumping of liquids." Thus, it appears that Applicant is defining a *conventional* centrifugal pump as one that *normally has approximately 7 or 8 impeller vanes*. Broadly interpreting the phrase, "normally has approximately 7 or 8 impeller vanes", the pump may have more or less than 7 or 8 vanes and still be considered conventional. Therefore, it is indefinite what conventional means in terms of the number of vanes. Additionally, the number of vanes on a pump impeller is not the only variable that affects whether the pump is *conventional*. The blades or vanes on an impeller may be forward-curved or rearward-curved, depending on it's application. The environment the pump is exposed to determines the materials used to manufacture the pump, which relates to the relative thickness of the blades (i.e. the blade's strength is determined by the thickness and material of the blade). So a thicker bladed impeller compared to a thinner bladed impeller will have less volume between adjacent vanes, when all other variables are similar.

On page 7, lines 23-27, Applicant states: "The present invention proposes to compensate the increase power requirement by removing vanes from a standard

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impeller of a standard centrifugal pump (standard in respect of it normally pumping at or near optimum, a fluid which is 100 percent liquid) the removal of such vanes increasing the passage way size." Applicant provides no standard for what optimum means.

Optimum, for example, may mean a specific efficiency percentage, a particular pressure head, or a certain rotational speed, depending on the pump application. Therefore, one cannot compare the claimed invention to one operating in or near *optimum conditions*, rendering the claim indefinite.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-18, as far as they are definite, are rejected under 35 U.S.C. 103(a) as being unpatentable over United Kingdom Patent Application GB 2 058 218 A by inventor Erich Holzhüter (Holzhüter hereinafter) in view of United States Patent No. 5,385,443 issued to Dufour (Dufour hereinafter).

Holzhüter discloses a centrifugal pump which includes a fluid inlet 3 and an outlet 7 and drivable by a power providing means (shaft), a fluid communication 5 (i.e. bleed line) providing means to provide a communication of fluid between the outlet 7 and the inlet 3 of the pump, said fluid communication 5 being such as to provide a fluid connection between the outlet and the inlet to deliver fluid of a higher pressure from the

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outlet to the inlet when the centrifugal pump is in operation. The fluid communication between the outlet and the inlet comprises at least one nozzle at the inlet for injection of bled fluid into the delivery line of the inlet of the centrifugal pump. The at least one nozzle has a reduced flow area, thereby increasing the velocity head of the flow (see page 1, lines 53-55). The nozzle is oriented in respect of the delivery line of the inlet so as to impart a pre-rotation force onto the main inlet side fluid delivery, the pre-rotation force is in a direction co-rotary with the impeller rotation direction (see page 1, lines 40-42).

Holzhüter does not disclose a liquid and gas mixture being pumped wherein the impeller has four vanes.

Dufour shows in Figures 1 and 2 a centrifugal pump with an additional fluid communication 31 located in the inlet of the pump casing used to pump a mixture of a liquid and a gas comprising an electric motor used to rotate an impeller 15 having four vanes or ribs 23 located thereon. The four vanes are provided for the purpose of efficiently pumping the liquid and gas fluid mixture.

Since Holzhüter and Dufour both teach centrifugal pumps with an additional fluid communication means in the pump casing inlet, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to use the gas/liquid four vane impeller of Dufour in the centrifugal pump apparatus of Holzhüter for the purpose of efficiently pumping a gas and liquid fluid mixture in a pump having a jet injector at the inlet of the pump casing.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Edgar whose telephone number is (703) 305-0050. The examiner can normally be reached on Monday-Thursday and alternate Fridays 7:30-5:00.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look can be reached on (703) 308-1044. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9302 for regular communications and (703) 872-9303 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0861.



Richard Edgar
Examiner
Art Unit 3745

RE
May 29, 2003


EDWARD K. LOOK
SUPERVISORY PATENT EXAMINER
GROUP 3700
5/30/03